

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Directions for Completing the Checklist

- This checklist indicates, in general, the content that should be included on each bridge specific plan sheet for culvert structures at each submission. Managers and designers should use engineering judgment to determine any additional information to be included or unnecessary information to be omitted.
- This checklist is to be completed in conjunction with the Department’s Construction Plan Submission Checklist.
- The checkboxes indicate that information is required and must be included in the plan submission.
- For each submission, indicate that the required information has been included in the plan submission by placing an “X” in the appropriate checkbox.
- Items may need to be added for some projects and may not be required for others. If the Project Manager determines an item is not required, place a strikethrough line through the item that is not required. Sheets that are not required may be deleted.
- Add a footer to this checklist once all unneeded sheets are deleted by selecting Document > Headers and Footers > add. Select a page range that includes all pages. Select Next. Place page number in the right footer by selecting insert “Page Number”. Select alternative “Page 1 of n” and then select OK.
- A TS&L Submission is only required for certain structures. Please refer to DeIDOT’s Bridge Design Manual for clarification.
- This checklist shall be reviewed before each submission to verify completeness. The designer shall sign this sheet attesting to the completeness and overall quality of the submission. A DeIDOT quality Assurance reviewer shall sign this sheet certifying the submission was reviewed in comparison with this checklist and that the submission has been determined to be complete. (Electronic Signature is Acceptable)

Project Information			
Contract #:		Primavera ID:	
Contract Name:			
Designer:		Project Manager:	

Verification of Submission Completeness		
Submission	Designer Approval	Quality Assurance Reviewer Approval
TS&L Plans		
Preliminary Plans		
Semi-Final Plans		
Final Plans		

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Plan, Section, & Elevation				
	TS&L	Prelim	Semi	Final
General				
Sheet title (bridge plan, section, & elevation)				
Detail title (plan, typical bridge section, elevation, etc.)				
Scale bar or written scale (1/16" = 1'-0", 1/2" = 1'-0", etc.)				
Plan				
North arrow				
Lane direction arrows				
Flow arrow or tidal arrow				
Construction baseline with stationing (labeled left to right or bottom to top)				
Secondary baseline(s) with stationing (as required)				
Proposed structure centerline				
Riprap area (optional – use appropriate cell pattern)				
Stream channel (optional – use appropriate line style)				
Top and bottom of bank lines w/ labels and slope markings (optional)				
Proposed structure using appropriate line types (use assigned solid lines for visible edges and assigned dashed lines for hidden or buried edges)				
Proposed guardrail, parapet and/or barrier (as required)				
Proposed handrail (as required-verify no post spacing conflicts)				
Proposed deck drainage (as required)				
Slope drain and stabilized outlet (as required)				
Label and/or dimension the following:				
Working point numbers				
Dimensions of structure and wingwalls				
Proposed structure centerline including skew angle				
Travel lanes, shoulders, and offsets				
Limit of riprap areas (as required)				
Proposed guardrail				
Proposed handrail (as required)				
Angles of all wingwalls				
Riprap and stone layer thicknesses (as required)				
All baseline tangent bearings				
Road name and maintenance number				
Watercourse name				
Proposed miscellaneous structure or roadway elements				
Proposed miscellaneous drainage elements				
Proposed pavement, curb, sidewalk, etc.				
End Elevation <i>(can be typical or location specific depending on proposed structural geometry)</i>				
Proposed structure opening				
Proposed wingwalls (showing any applicable drainage)				
Proposed barrier (including scuppers) and/or guardrail				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Plan, Section, & Elevation				
	TS&L	Prelim	Semi	Final
Proposed handrail (as required-verify no post spacing conflicts)				
Aesthetic surface treatment-veneered/textured (as required)				
V-notches at joints between sections				
Structure opening chamfers				
Coarse aggregate for foundation stabilization				
Riprap over stone over geotextiles (types and thicknesses)				
Roadway edge/top of slope				
Proposed headwall and/or toewall (as applicable)				
Design water elevation line				
Channel bed fill				
Low flow channel (as required)				
Stone outlets (as required)				
Label and/or dimension the following:				
Structure opening finished height, width and chamfer				
Pipe diameter(s) (if used)				
Design water elevation				
Invert elevations of inlet and outlet				
Bottom of footing elevation				
Stream bank slopes				
Coarse aggregate for foundation stabilization thickness and overhang beyond structures				
Riprap over stone over geotextiles (types and thicknesses)				
Barrier heights and section lengths				
Aesthetic surface treatment (as required)				
Barrier joint types				
Proposed handrail (as required)				
V-notches				
Weep hole diameters and inverts (as required)				
Low-flow channel dimensions (as required)				
Channel bed fill thickness				
Standard note about in-filling riprap voids with topsoil				
Bridge Section <i>(typical or as denoted by section arrows)</i>				
Proposed structure				
Proposed wingwalls (specific to view)				
Proposed parapet/barrier (showing handrail – as required)				
Proposed headwalls and/or toewalls (as applicable)				
Aesthetic surface treatment-veneered/textured (as required)				
Pavement section				
Streambed material/channel bed fill through structure				
Riprap over stone over geotextiles				
Roadway centerline and/or construction baseline				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Plan, Section, & Elevation				
	TS&L	Prelim	Semi	Final
Flow arrow				
Label and/or dimension the following:				
Travel lanes, shoulders, and offsets				
Streambed material/channel bed fill (types and thicknesses)				
Riprap over stone (types and thicknesses)				
Bottom of structure elevations				
Coarse aggregate for foundation stabilization (thickness and overhang beyond structures)				
Parapet, barrier, sidewalk, guardrail and/or handrail				
Proposed headwall and/or toewall (as applicable)				
Aesthetic surface treatment (as required)				
Stream bank slope				
P.G.A.				
Cross slope				
Pavement section				
Working Points Schedule				
Point number				
Station				
Offset				
Northing				
Easting				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Precast Concrete Box Culvert Details				
Note: Only include this portion of the checklist on concrete box culvert applications.	TS&L	Prelim	Semi	Final
General <i>(can be one sheet or multiple sheets as necessary)</i>				
Sheet title				
Detail title				
Scale bar or written scale (1/16" = 1'-0", 1/2" = 1'-0", etc.)				
Notes for Precast Elements				
Use standard precast concrete notes edited as needed				
Typical Bridge Section <i>(If using ASTM C1577, only Headwall and Toewall Details are required)</i>				
Proposed structure				
Chamfers (as required)				
Bar reinforcement				
Headwall (can use a separate detail if a separate precast element)				
Toewall (can use a separate detail if a separate precast element)				
Label and/or dimension the following:				
Opening width and height				
Top slab thickness				
Wall thickness				
Toewall and/or headwall width and height				
Bar reinforcement (size and spacing)				
Lap splices				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Precast Concrete Arch and Rigid Frame Details				
Note: Only include this portion of the checklist on concrete arch and rigid frame applications.	TS&L	Prelim	Semi	Final
General <i>(can be one sheet or multiple sheets as necessary)</i>				
Sheet title				
Detail title				
Scale bar or written scale (1/16" = 1'-0", 1/2" = 1'-0", etc.)				
Notes for Precast Elements				
Use standard precast concrete notes edited as needed				
Typical Structure Section				
Proposed arch or frame				
Arch radii or frame chamfer				
Headwall (can use a separate detail if a separate precast element)				
Label and/or dimension the following:				
Opening width and height				
Top slab thickness				
Wall thickness				
Headwall width and height				
Bar reinforcement (size and spacing)				
Lap splices				
Structure Footing Section				
Proposed arch or frame footing				
Cut-out for arch or frame seat				
Label and/or dimension the following:				
Footing width and thickness				
Cut-out for arch or frame seat				
Grout for arch or frame seat				
Bar reinforcement (size and spacing)				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Wingwall Details				
	TS&L	Prelim	Semi	Final
Wingwall Section				
Proposed wingwall and footer				
Aesthetic surface treatment-veneered/textured (as required)				
Bar reinforcement				
Shear key				
Label and/or dimension the following:				
Footing width and thickness				
Stem height and thickness				
Aesthetic surface treatment (as required)				
Bar reinforcement (size and spacing)				
Lap splices				

Cast-in-Place Concrete Parapet/ Barrier Details				
	TS&L	Prelim	Semi	Final
General				
Sheet title				
Detail title				
Scale bar or written scale				
Elevations (can be a single elevation view of entire parapet/barrier or be broken into typical section elevation views)				
Proposed parapet/barrier (use assigned solid and hidden lines where appropriate)				
Bar reinforcement				
V-notches and joints				
Scuppers (if applicable)				
Label and/or dimension the following:				
End section taper length and height (if applicable)				
All bar reinforcement (quantity, mark and spacing)				
Section lengths and height(s)				
Joint type and material				
Typical Sections				
Proposed parapet/barrier (use assigned solid and hidden lines where appropriate)				
Bar reinforcement				
Scuppers (if applicable, include one section with scupper and one section without scupper for bar reinforcement detail)				
Shear key				
Chamfers and v-notches				
Proposed handrail (as required)				

Delaware Department of Transportation
Plan Submission Checklist for Culvert Structures

Cast-in-Place Concrete Parapet/ Barrier Details				
	TS&L	Prelim	Semi	Final
Label and/or dimension the following:				
Parapet height and width				
Bar reinforcement (quantity, mark and spacing)				
Scupper type, size, and slope (if applicable)				
Shear key (height and width)				
Chamfers and v-notches				
Proposed handrail, details, type and placement (as required/applicable, separate sheet may be required)				

Reinforcing Bar List (Cast-in-Place Elements Only)				
	TS&L	Prelim	Semi	Final
General				
Use standard reinforcing bar sheet with DeIDOT Rebar Program				

Soil Borings				
	TS&L	Prelim	Semi	Final
General				
Use standard soil boring sheet including rock coring information (where applicable) and standard notes				
Heading (includes Boring Number, Station, Offset, Northing, Easting, Elevation and Date)				
Table Shall Include the Following Columns:				
Sample No. (numbered sequentially based on depth)				
Depth (depth of each 6" sample)				
Blows/6"				
Sample Description (include sample recovery)				
Remarks (include bottom of footing, estimated pile tip, and water table elevations)				
Class (AASHTO Soil Classification)				